

## **REMARKS**

In the Office Action dated September 3, 2004, Claims 1-4, 6-9, and 11-32 are pending. Claims 21, 25 and 28 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form to include all of the limitations of the base claim and any intervening claims. Claims 1-4, 6-9, 11-20, 22-24 and 26-32 are rejected.

This Response addresses each of the Examiner's objections and rejections. Applicants therefore respectfully submit that the present application is in condition for allowance. Favorable consideration of all pending claims is therefore respectfully requested.

Claim 12 is objected to because of a typographical error. Applicants have corrected the typographical error in claim 12. As such, the objection to claim 12 is overcome and withdrawal thereof is respectfully requested.

Claim 32 is rejected under 35 U.S.C. §112, second paragraph, as allegedly indefinite. The Examiner has suggested removing the semicolons from the claim to obviate the rejection.

In response, Applicants have amended claim 32 to replace the semicolons with commas. As such, the rejection of claim 32 for indefiniteness is overcome, and withdrawal thereof is respectfully requested.

Claims 1, 6, 11-12, 24, and 30-32 are rejected under 35 U.S.C. §102(e) as allegedly anticipated by Conrad et al. (U.S. Patent 5,707,617).

Applicants observe that claims 2, 7 and 25 are not included in the rejection. These claims further define the attenuated cells as temperature sensitive. In an effort to favorably advance prosecution, Applicants have amended independent claims 1, 6 and 24 to incorporate the language of claims 2, 7, and 25, respectively. Claim 32 has also been amended to define the attenuated cells as temperature sensitive. Claims 2, 7 and 25 are therefore canceled without

prejudice. Applicants reserve the right to pursue the subject matter encompassed by originally filed claims in a continuation application.

It is respectfully submitted that Conrad et al. do not teach isolated, attenuated, temperature sensitive strains derived from pathogenic *Neospora* isolates or vaccines prepared therefrom, or how to obtain such strains. Therefore, the subject matter of claims 1, 6, 11-12, 24 and 30-32, as presently pending, is not anticipated by Conrad et al. Withdrawal of the rejection under §102(e) based on Conrad et al. is therefore respectfully requested.

Claims 1, 3-4, 6, 8-9, 13, 15-16, 17, 19-20 and 32 rejected under 35 U.S.C. §102(b) as allegedly anticipated by Lindsay et al. (*Am. J. Vet. Res.* 56: 1176-1180, Sept. 1995).

It is observed that claims 2, 7, 14 and 18 are not included in the rejection. These claims define the attenuated cells as temperature sensitive. As submitted above, claims 1, 6 and 32 have been amended to include the delineation of temperature sensitivity. Similarly, claims 13 and 17 have been amended to also include the recitation of temperature sensitivity. Dependent claims 14 and 18 are therefore canceled without prejudice. Applicants reserve the right to pursue the subject matter encompassed by originally filed claims in a continuation application.

It is respectfully submitted that Lindsay et al. (1995) do not teach isolated attenuated, temperature sensitive strains derived from pathogenic *Neospora* isolates or vaccines prepared therefrom, or how to obtain such strains. Therefore, the subject matter of claims 1, 3-4, 6, 8-9, 13, 15-16, 17, 19-20 and 32, as presently pending, is not anticipated by Lindsay et al. (1995). Withdrawal of the rejection under §102(b) based on Lindsay et al. (1995) is therefore respectfully requested.

Claims 1, 3-4, 6, and 8-9 rejected under 35 U.S.C. §102(a) as allegedly anticipated by Hemphill et al. (October 1996).

As submitted, independent claims 1 and 6 have been amended to incorporate the recitation of claims 2 and 7 regarding temperature sensitivity. Hemphill et al. do not teach isolated, attenuated, temperature sensitive strains derived from pathogenic *Neospora* isolates, or vaccines prepared from such attenuated, temperature sensitive strains. Therefore, the subject matter of claims 1, 3-4, 6 and 8-9, as presently pending, is not anticipated by Hemphill et al. Withdrawal of the rejection under §102(a) based on Hemphill et al. is therefore respectfully requested.

Claims 1, 6, 13 and 17 are rejected under 35 U.S.C. §102(e) as allegedly anticipated by Kim et al. (U.S. Patent 5,976,553).

It is respectfully submitted that claims 1, 6, 13 and 17, as presently amended, further define the attenuated cells as temperature sensitive. Kim et al. do not teach isolated attenuated, temperature sensitive strains derived from pathogenic *Neospora* isolates, or vaccines prepared from such attenuated, temperature sensitive strains. Accordingly, the subject matter of claims 1, 6, 13 and 17, as presently pending, is not anticipated by Kim et al. Withdrawal of the rejection under §102(e) based on Kim et al. is therefore respectfully requested.

Claims 17, 22-24, 26-27 and 29-32 are rejected under 35 U.S.C. 102(e) as allegedly anticipated by Conrad et al. (U.S. Patent 6,716,423).

It is respectfully submitted that independent claims 17, 24 and 32 have been amended to further define the attenuated cells as temperature sensitive. Conrad et al. do not teach a method of making a vaccine from attenuated, temperature sensitive strains, or methods of vaccination with such a vaccine. Accordingly, Conrad et al. do not anticipate the subject matter of claims 17, 22-24, 26-27 and 29-32, as presently pending. Withdrawal of the rejection under §102(e) based on Conrad et al. is therefore respectfully requested.

Claims 1-3, 6-8, 13-15 and 17-19 are rejected under 35 U.S.C. §102(a) as allegedly anticipated by Lindsay et al. (1996).

The Examiner contends that Lindsay et al. disclose mutated strains of *Neospora caninum* that were produced with the same chemical mutagen as used by Applicants to produce mutant strains of *Neospora caninum* disclosed in the present application. The Examiner also contends that the mutant strains of Lindsay et al. (1996) were maintained and attenuated through subculturing *in vitro* and also evidenced genetic changes due to mutations generated by exposure to the chemical mutagen. According to the Examiner, the mutant strains of Lindsay et al. (1996) are attenuated based upon Applicants' own definition of attenuation found at page 5, lines 17-20 of the specification. The Examiner states that Applicants have not provided any evidence showing that the mutant strains of Lindsay et al. (1996) are not temperature sensitive, or that the same method of Lindsay et al. (1996) does not produce temperature sensitive mutant strains of *Neospora*. Thus, the Examiner contends that by all comparable data, the strains of Lindsay et al. (1996) are the same or equivalent strains presently claimed. The Examiner therefore concludes that the reference inherently anticipates the instantly claimed invention.

Lindsay et al. (1996) disclose the production of mutated strains of *Neospora caninum* through treatment with N-methyl-N-nitrosoguanidine. The Examiner contends that the mutated strains would be attenuated and temperature sensitive at least to freezing temperatures, and therefore, the cultured *N. caninum* cells of Lindsay et al. (1996) anticipate the now claimed invention.

Applicants respectfully submit that there is no teaching in Lindsay et al. (1996) that the mutated *Neospora* cells exhibit attenuated pathogenicity as compared to the parent pathogenic strain. Furthermore, there is no teaching in Lindsay et al. (1996) that the two

*Neospora* mutants are temperature-sensitive, i.e., characterized by a reduced growth at the body temperature of a mammal as compared to a lower temperature. Additionally, there is no teaching in Lindsay et al. (1996) that the *Neospora* mutants are capable of triggering an immune response in a mammal against neosporosis.

In this regard, Applicants respectfully submit that the procedure disclosed in Lindsay et al. (1996) is not directed towards production of temperature-sensitive mutants of *Neospora*. Although both Lindsay et al. (1996) and the present application employed the same chemical mutagen, N-methyl-N'-nitro-N-nitrosoguanidine, this chemical compound merely induces mutations in the exposed cells, not necessarily mutations that lead to a temperature-sensitive phenotype. The present application has provided a unique step of shifting the cells from 37°C prior to the treatment with the mutagen, to 32.5°C after the treatment. The mutagenized cells are incubated at this lower temperature for an extended period of time and are then cloned by limiting dilution. See, e.g., page 5, lines 24-27; and page 15, lines 11-29. Applicants respectfully submit that the temperature shift in the process, as disclosed in the present application, is critical to the selection of temperature-sensitive mutants. In contrast, there is no mention of temperature shift in Lindsay et al. (1996). Lindsay et al. (1996) apparently incubated the cells at the temperature of 37°C, which is the typical temperature for propagating *Neospora* in culture.

Applicants respectfully submit that there is no basis for the Examiner to conclude that the mutants in Lindsay et al. (1996) would inherently be temperature sensitive, or that the procedure of Lindsay et al. (1996) would inherently produce temperature sensitive mutants. The fact that a certain characteristic may be present in the prior art is not sufficient to establish

the inherency of that result of characteristic. *In re Rijckaert*, 9 F.3d 1531, 1534, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993) (emphasis added).

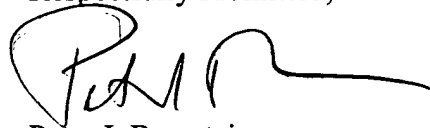
Accordingly, it is respectfully submitted that Lindsay et al. (1996) do not teach an isolated, attenuated, temperature-sensitive *Neospora* strain, as presently claimed. Nor do Lindsay et al. teach a method of preparing such a strain. Thus, the rejection under 35 U.S.C. §102(a) based on Lindsay et al. (1996) is overcome. Withdrawal of the rejection is therefore respectfully requested.

Claims 1-4 and 6-9 are rejected under the judicially created doctrine of obviousness-type double patenting over claims 1-8 of U.S. Patent No. 6,656,479 for reasons set forth in the previous Office Action.

Applicants respectfully submit that a terminal disclaimer will be filed once Applicants receive an indication of allowance of the claims presented herewith.

In view of the foregoing, it is respectfully submitted that the present case is in condition for allowance, which action is earnestly solicited.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Peter I. Bernstein', with a long horizontal flourish extending to the right.

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